

**ROUTER SWITCH FABRIC PROTECTION USING
FORWARD ERROR CORRECTION**

ABSTRACT OF THE DISCLOSURE

Instead of alternatively utilizing only one fabric or the other fabric of a redundant pair, both fabrics simultaneously transmit duplicate information, such that each packet forwarding module (PFM) receives the output of both fabrics simultaneously. In real time, an internal optics module (IOM) analyzes each information chunk coming out of a working zero switch fabric; simultaneously examines a parallel output of a working one duplicate switch fabric; and compares on a chunk-by-chunk basis the validity of each and every chunk from both switch fabrics. The IOM does this by examining forward error correction (FEC) check symbols encapsulated into each chunk. FEC check symbols allow correcting a predetermined number of bit errors within a chunk. If the chunk cannot be corrected, then the IOM provides indication to all PFMs downstream that the chunk is defective. Under such conditions, the PFMs select a chunk from the non-defective switch fabric. Under error-free normal conditions, however, the PFMs select a chunk arbitrarily from a default switch fabric. In this way, each chunk in real time is selected from a non-defective source and is thus guaranteed to be error free. Accordingly, if a switch fabric fails, no information chunks are lost anywhere in the system.

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